

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A computer-implemented method for analyzing a virtual function, said method comprising:

~~locating determining whether~~ a virtual table exists for a virtual function, said virtual table comprising a start address for said virtual function; and

determining a call type for said a virtual function;

creating an instruction for said virtual function, said instruction comprising a control transfer function that directs execution to instrumentation code; and

rewriting said virtual table with a modified virtual table comprising an address for said instruction instead of said start address, wherein upon a call to said virtual function, said address for said instruction is loaded.

2. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 1 further comprising the step of:

performing instrumentation on said virtual function based upon said call type.

3. (Original) The computer-implemented method for analyzing a virtual function as recited in Claim 1 wherein said call type is selected from the group comprising direct, indirect, and virtual.

4. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 2 wherein the step of performing instrumentation on said virtual function based upon said call type comprises:

~~provided said virtual table is located, replacing an existing address~~

~~for said virtual function with a new address for said virtual function in said virtual table such that said new address points to instrumentation code;~~

~~upon a call to said virtual function, load said new address from said virtual table such that execution is directed to the instrumentation code;~~
~~and~~

~~continue execution and execute~~ executing ~~said instrumentation code such that control is delivered to said instrumentor.~~

5. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 4 further comprising:

performing a desired instrumentation task by said instrumentor; and

~~resume~~ resuming ~~execution by said instrumentor at said~~ start ~~existing~~ address previously contained in said virtual table.

6. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 4 further comprising:

overwriting said instrumentation code with instrumentation code which performs a desired instrumentation task; and

~~provide~~ providing ~~an instruction at the end of said instrumentation code wherein said instruction points back to said~~ start ~~existing~~ address previously contained in said virtual table.

7. (Original) The computer-implemented method for analyzing a virtual function as recited in Claim 1 further comprising:

determining from which location said virtual function has been called.

8. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 4 further comprising:

maintaining a mapping between said start ~~existing~~ address for said

virtual function and said ~~new~~ address for said instruction ~~virtual function~~.

9. (Currently Amended) A computer-readable medium embodying instructions that cause a computer to perform a method for analyzing a virtual function, said method comprising:

locating determining whether a virtual table exists for a virtual function, said virtual table comprising a start address for said virtual function; and

determining a call type for said a virtual function;

creating an instruction for said virtual function, said instruction comprising a control transfer function that directs execution to instrumentation code; and

rewriting said virtual table with a modified virtual table comprising an address for said instruction instead of said start address, wherein upon a call to said virtual function, said address for said instruction is loaded.

10. (Currently Amended) The computer-readable medium of Claim 9 further comprising instructions that cause said computer to perform said method further comprising the step of:

performing instrumentation on said virtual function based upon said call type.

11. (Original) The computer-readable medium of Claim 9 wherein said call type is selected from the group comprising direct, indirect, and virtual.

12. (Currently Amended) The computer-readable medium of Claim 10 further comprising instructions that cause said computer to perform said method further comprising the step of:

~~provided said virtual table is located, replacing an existing address for said virtual function with a new address for said virtual function in said virtual table such that said new address points to instrumentation code;~~

~~upon a call to said virtual function, load said new address from said virtual table such that execution is directed to the instrumentation code;~~
and

~~continue execution and execute~~ executing said instrumentation code such that control is delivered to said instrumentor.

13. (Currently Amended) The computer-readable medium of Claim 12 further comprising instructions that cause said computer to perform said method further comprising the steps of:

performing a desired instrumentation task by said instrumentor; and

~~resume~~ resuming execution by said instrumentor at said start ~~existing~~ address previously contained in said virtual table.

14. (Currently Amended) The computer-readable medium of Claim 12 further comprising instructions that cause said computer to perform said method further comprising the steps of:

overwriting said instrumentation code with instrumentation code which performs a desired instrumentation task; and

~~provide~~ providing an instruction at the end of said instrumentation code wherein said instruction points back to said start ~~existing~~ address previously contained in said virtual table.

15. (Currently Amended) The computer-readable medium of Claim 9 further comprising instructions that cause said computer to perform said method further comprising the steps of:

determining from which location said virtual function has been called.

16. (Currently Amended) The computer-readable medium of Claim 12 further comprising instructions that cause said computer to perform said method further comprising the steps of:

maintaining a mapping between said start existing address for said virtual function and said new address for said instruction virtual function.

17. (Currently Amended) An apparatus for analyzing a virtual function, said apparatus comprising:

means for locating determining whether a virtual table exists for a virtual function, said virtual table comprising a start address for said virtual function; and

means for determining a call type for said a virtual function;

means for creating an instruction for said virtual function, said instruction comprising a control transfer function that directs execution to instrumentation code; and

means for rewriting said virtual table with a modified virtual table comprising an address for said instruction instead of said start address, wherein upon a call to said virtual function, said address for said instruction is loaded.

18. (Original) The apparatus of Claim 17 for analyzing a virtual function, said apparatus further comprising:

means for performing instrumentation on said virtual function based upon said call type.

19. (Original) The apparatus of Claim 17 for analyzing a virtual function wherein said call type is selected from the group comprising direct, indirect, and virtual.

20. (Currently Amended) The apparatus of Claim 18 for analyzing a virtual function, said apparatus further comprising:

~~means for replacing an existing address for said virtual function with a new address for said virtual function in said virtual table such that said new address points to instrumentation code, provided said virtual table is located;~~

~~means for loading said new address from said virtual table such that execution is directed to the instrumentation code, upon a call to said virtual function; and~~

~~means for continuing execution and executing said instrumentation code such that control is delivered to said instrumentor.~~

21. (Currently Amended) The apparatus of Claim 20 for analyzing a virtual function, said apparatus further comprising:

~~means for performing a desired instrumentation task by said instrumentor; and~~

~~means for resuming execution by said instrumentor at said start existing address previously contained in said virtual table.~~

22. (Currently Amended) The apparatus of Claim 20 for analyzing a virtual function, said apparatus further comprising:

~~means for overwriting said instrumentation code with instrumentation code which performs a desired instrumentation task; and~~

~~means for providing an instruction at the end of said instrumentation~~

code wherein said instruction points back to said start existing address previously contained in said virtual table.

23. (Original) The apparatus of Claim 17 for analyzing a virtual function, said apparatus further comprising:

means for determining from which location said virtual function has been called.

24. (Currently Amended) The apparatus of Claim 20 for analyzing a virtual function, said apparatus further comprising:

means for maintaining a mapping between said start existing address for said virtual function and said new address for said virtual function.